

WHAT IS CLAIMED IS:

- 1 1. A method for matching a response intensity of a sensor array to an
2 odorant with the detection threshold of a human nose to said odorant, said method
3 comprising:
4 exposing said odorant to an array of sensors to produce said response
5 intensity, thereby matching said response intensity of said sensor array to said detection
6 threshold of said human nose.
- 1 2. A method in accordance with claim 1, wherein said sensor array
2 comprises at least two sorption-based sensors which are members selected from the group
3 consisting of a chemiresistors, a conducting/nonconducting regions sensor, a SAW
4 sensor, a metal oxide gas sensor, a bulk conducting polymer sensor, a Langmuir-Blodgett
5 film sensor, and combinations thereof.
- 1 3. A method in accordance with claim 2, wherein said sensor is a
2 conducting/nonconducting regions sensor.
- 1 4. A method in accordance with claim 2, wherein said sensor is a bulk
2 conducting polymer sensor.
- 1 5. A method in accordance with claim 3, wherein said nonconducting
2 region is an organic polymer.
- 1 6. A method in accordance with claim 5, wherein said organic
2 polymer is a member selected from the group consisting of (poly(4-vinyl phenol), poly(α -
3 methyl styrene), poly(vinyl acetate), poly(sulfone), poly(caprolactone), poly(ethylene-co-
4 vinyl acetate), poly(ethylene oxide), poly(ethylene), poly(butadiene), poly(vinylidene
5 fluoride), poly(n-butyl methacrylate), poly(epichlorohydrin) and poly(ethylene glycol)).
- 1 7. A method in accordance with claim 1, wherein said odorant is a
2 member selected from the group consisting of alkanes, alkenes, alkynes, dienes, alicyclic
3 hydrocarbons, arenes, alcohols, ethers, ketones, aldehydes, carbonyls, carbanions,
4 heterocycles, polynuclear aromatics, organic derivatives, biomolecules, microorganisms,
5 bacteria, viruses, sugars, nucleic acids, isoprenes, isoprenoids, fatty acids and their
6 derivatives.

1 8. A method in accordance with claim 1, wherein said response
2 intensity of said sensor array to said odorant is inversely proportional to the vapor
3 pressure of said odorant.

1 9. A method for validating that a sensor array response intensity
2 matches a human nose detection threshold, the method comprising:

3 (a) contacting said sensor array with a constant fraction of a known vapor
4 pressure of a first odorant to produce a first response intensity;

5 (b) contacting said sensor array with said constant fraction of a known
6 vapor pressure of a second odorant to produce a second response intensity; and

7 (c) comparing said first response intensity to said second response
8 intensity, thereby validating that said sensor array response intensity matches said human
9 nose detection threshold.

1 10. A method in accordance with claim 9, wherein said sensor array
2 comprises at least two sorption-based sensors which are members selected from the group
3 consisting of a chemiresistors, a conducting/nonconducting regions sensor, a SAW
4 sensor, a metal oxide gas sensor, a bulk conducting polymer sensor, a Langmuir-Blodgett
5 film sensor, and combinations thereof.

1 11. A method in accordance with claim 10, wherein said sensor is a
2 conducting/nonconducting regions sensor.

1 12. A method in accordance with claim 10, wherein said sensor is a
2 bulk conducting polymer sensor.

1 13. A method in accordance with claim 11, wherein said
2 nonconducting region is an organic polymer.

1 14. A method in accordance with claim 13, wherein said organic
2 polymer is a member selected from the group consisting of (poly(4-vinyl phenol), poly(α -
3 methyl styrene), poly(vinyl acetate), poly(sulfone), poly(caprolactone), poly(ethylene-co-
4 vinyl acetate), poly(ethylene oxide), poly(ethylene), poly(butadiene), poly(vinylidene
5 fluoride), poly(n-butyl methacrylate), poly(epichlorohydrin) and poly(ethylene glycol)).

1 15. A method in accordance with claim 9, wherein said odorant is a
2 member selected from the group consisting of alkanes, alkenes, alkynes, dienes, alicyclic
3 hydrocarbons, arenes, alcohols, ethers, ketones, aldehydes, carbonyls, carbanions,
4 heterocycles, polynuclear aromatics, organic derivatives, biomolecules, microorganisms,
5 bacteria, viruses, sugars, nucleic acids, isoprenes, isoprenoids, fatty acids and their
6 derivatives.

1 16. A method in accordance with claim 9, wherein said first response
2 intensity is greater than said second response intensity if said first vapor pressure is lower
3 than said second vapor pressure and said fraction is not constant.

Add
a27
a27